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STATE OF ILLINOIS

Progress Report

Hyon Waste Management Services, Inc.

Chicago, Illinois

December 10, 1971

- TO:
- (1) State of Illinois, Environmental Protection Agency  
Bureau of Water Pollution Control  
Springfield, Illinois 62706  
Attention: Mr. D. B. Morton, Chief
  - (2) Department of Environmental Control  
City of Chicago  
325 N. Wells (7th Floor)  
Chicago, Illinois 60610  
Attention: Mr. John G. Morris, Deputy Commissioner
  - (3) Metropolitan Sanitary District of Greater Chicago  
100 East Erie  
Chicago, Illinois 60611  
Attention: Mr. Earl Knight
  - (4) Chicago District Office  
Illinois Environmental Protection Agency  
1919 W. Taylor Street  
Chicago, Illinois 60612  
Attention: Mr. J. C. Paccione

**INTERNATIONAL  
HYDRONICS CORPORATION**

Box 910, R-4

PRINCETON, N. J. 08540

PHONE: (201) 329-2361

December 10, 1971

Progress Report

Hyon Waste Management Services, Inc.

11700 South Stony Island Avenue  
Chicago, Illinois

Construction

An accelerated construction program has been initiated at the Hyon Waste Management Plant after a delay of six to eight weeks, pending financing arrangements. Significant construction was started about November 15.

In the interim preceding this, a lease was taken on an additional area to the south of the original site consisting of an additional pier into Lake Calumet Harbor and the onshore land. This brings the total Hyon plant acreage to a total of 56.6 acres. Filling of the additional land area by the Port of Chicago is nearly complete.

During the period prior to November 15, the final stabilization basis were completed, with the exception of the final outfall pipes which were not installed in order to avoid any possibility of effluent discharge.

The final six, of ten, bio-chemical beds were prepared for service. The original four beds were taken out of service, modified, and returned to service as noted under "operations".

Construction is in progress on the Chemical Receiving and Treatment Station, the Evaporative Incinerator Site and the Tank Farm Site.

On the basis of the initial operating period several improvements in design were made and work is in progress to implement these. Included is a system to recycle bed leachate back to the bio-chemical receiving station with controlled transfer from there to the activated sludge unit. A bio-chemical bed heating system utilizing heat from a boiler or the evaporative incinerator is also under construction.

Site preparation for an extension of bio-chemical bed capacity, has commenced. This area is the subject of a separate report to be submitted for your information and approval, if required.

Contracts have been let for the construction of the office and laboratory building, change house, shop, and the main incinerator foundations and the activated sludge clarifier. Construction has been or will be initiated this month.

Hyon Waste Management Services, Inc.

Several new pieces of mobile equipment have been acquired for operation and maintenance of the bio-chemical system.

Three new mobile trailers have been rented to house staff and laboratory until completion of the buildings.

### Operations

Additional contracts for treatment of wastes have been written, and copies of each contract have been forwarded to you, as required by our operating permits. Wastes suitable for treatment by bio-chemical treatment have been received and processed. Contracts for other types of waste specify receipt at future dates when treatment facilities will be operational.

A total of 1,700,000 gallons of bio-degradable wastes have been processed. Records of receipt and treatment of all materials have been maintained. Wastes have been processed through stages of chemical pretreatment and bio-degradation on the beds. Most of the bed leachate has also been treated in the activated sludge unit, but some has been intentionally by-passed. Leachate and activated sludge effluent is segregated in the two final stabilization basins. The total wastewater in storage, after evaporation, was estimated to be 600,000 gallons, on December 10, 1971. There has been no discharge from the plant to the Lake and no observed losses to the ground or groundwater.

The initial operating period was essentially complete at the end of November. During this period extensive tests were run on the operation of the bio-chemical system, especially the performance of the beds. In general, the beds were found to operate at higher treatment efficiency and loading than predicted. Optimum leachate was clear and colorless with a COD of 800 to 1000 ppm. High COD values were in the order of 2000 ppm. Some improvements in bed composition, bed depth, configuration were made on the basis of this experience when putting the remaining six original beds in service and the original four beds have since been modified to these conditions.

Before they were taken out of service the original four beds were operated to process breakdown in order to test the conditions and limits of failure, including hydraulic, chemical, organic, solids and toxicity loads with minimal maintenance. At failure COD values of 15,000 to 30,000 ppm were produced.

The activated sludge unit was started up and operated as a fill and draw unit without a clarifier. Some difficulty was found in sludge settling, and hydraulic capacity was limited. Accordingly a temporary baffled clarifier is being installed to suffice until the final clarifier is erected.

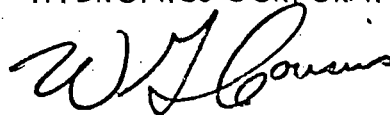
The semi-treated bio-chemical wastewater was found to be pale or colorless and to benefit little from coagulation. Therefore no coagulation equipment will be installed at this time.

The quality of the final bio-chemical wastewater has not been established because the intermediate stabilization basin has not been used and the activated sludge unit has not been operated to maximum efficiency. However the partially treated water from the activated sludge system has a COD value of approximately 300 ppm and is judged suitable for evaporation, which is required because of its 1% salt concentration.

It is anticipated that the major portion of accumulated, treated wastewater will be reused in the bed heating system leaving part of the capacity of the three stabilization basins in reserve. The practice of limiting waste receipts to match the storage and evaporative capacity of the plant will be continued.

Yours very truly,

International  
HYDRONICS CORPORATION



W. G. Cousins

WGC/vgh